REMARKS

This is in response to the Office Action mailed September 19, 2006. Reconsideration of this application is respectfully requested in view of this response/amendment.

STATUS OF CLAIMS

Claims 1-31 are pending.

Claim 20 is objected to as it is believed Applicant intended placed not "paced".

Claims 2, 3, 5, 10 13, 14, 15, 16, 19, 20, 21, 23, 24, and 28 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention.

Claims 1-31 stand rejected under 35 U.S.C. § 101 – Claims 1-31 refer to software for performing a method, as the code itself is not executed, no useful concrete and tangible result can occur. The software is not embodied on a tangible medium, thus if a result was produced it would not be tangible. The software itself has no code for providing a useful result even if the code was to be executed.

Claims 1-3, 6-14, 16-22, 24-26,and 29 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. 6,873,995 (Benson).

Claims 4, 5, 15, 23 and 27-28 are rejected under 35 U.S.C § 103(a) as being unpatentable over Benson in view of official notice.

OVERVIEW OF CLAIMED INVENTION

The present invention provides a system and method for implementing support for the XA 2-phase commit protocols in client middleware for a cluster of one or more database servers

that use shared disk technology. The present invention's method, as implemented in middleware, comprises the steps of: (a) aiding in receiving an invocation from a client for a first phase of commit for a transaction representing a unit of work; (b) inserting an entry in a relational table corresponding to the unit of work and transmitting an instruction to the server to prepare to commit for the transaction, wherein the inserted entry indicating the unit of work is potentially an indoubt entry; (c) receiving a request from the client, and if the received request is a commit or rollback decision: communicating with a server and processing the commit or rollback request, and upon successful processing, deleting a corresponding entry in the relational table, else if the received request is a recover decision: querying the relational table to identify a list of indoubt units of work; transmitting the list of indoubt units of work to the client; receiving a commit or rollback decision from the client; communicating with the server to process the commit or rollback request, and upon successful processing, and deleting a corresponding entry in the relational table.

The present invention provides support for the XA 2-phase commit protocols without requiring the target database system to understand the XA 2-phase commit protocol. This is accomplished by mapping the XA 2-phase commit protocols onto other 2-phase commit protocols that the database server does support (such as the non-XA 2-phase commit protocols that are defined in DRDA). Furthermore, the system and method allow the client system to fully support the XA RECOVER command in the instance that one or more members in the database server cluster are unavailable.

The present invention eliminates the need to scan logs of all the database members to produce a list of indoubt units of work for the XA RECOVER command and also eliminates the need for client-side logging in the database middleware when the DB2 server does not support XA protocols natively. Based upon the teachings of the present invention, the XA transaction manager and database middleware are able to issue the XA RECOVER command from any computer in the network (with no dependency on issuing RECOVER from the same computer in the network or the same IP address in the network).

REJECTIONS UNDER 35 U.S.C. § 112

With respect to claims 2 and 3, the Examiner asserts that the relationship between "a COMMIT", "a ROLLBACK" and "corresponding entry" and their recitations in steps b and c of claim 1 is unclear. Applicants respectfully disagree with this assertion.

Specifically, claim 1 teaches the reception of an invocation for a first phase of commit for a transaction representing an unit of work, the insertion of an entry in a relational table corresponding to the unit of work when the unit of work is a potential indoubt entry (it should be emphasized that the preamble teaches that the relational table stores a list of potentially indoubt entries), and updating the relational table after execution of a request to COMMIT, ROLLBACK, or RECOVER. Claim 2 adds further specificity to claim 1 when either a COMMIT or ROLLBACK request is successfully processed, a **corresponding entry to that unit work is erased from the relational table**.

In synchronicity with the claims, the specification also clarifies the maintenance of such a table (for example, see relational table **405** in Figure 4a), insertion of entries in relational table **405** (for example, see the description of the specification-as-filed with respect to figure 4b, which outlines insertion of such an entry via, for example, an SQL_INSERT), and updating relational table **405** (for example, see the description of the specification-as-filed with respect to figure 4b, which outline one such technique for updating the table involving a DELETE operation).

Hence, Applicants respectfully disagree with the Examiner that the relationship between "a COMMIT", "a ROLLBACK" and "corresponding entry" and their recitations in steps b and c of claim 1 is unclear.

Further, the Examiner states that the claim expands on an "optionally recited limitation" and therefore may not be limiting. Applicants wish to note that, in Claim 1, the decision received from the client can be any of the following: COMMIT, ROLLBACK, or a RECOVER. In Claim 2, the Claim restricts the same request to either a COMMIT or a ROLLBACK, with the added feature of deleting a entry corresponding to the inserted work unit entry in the relational table. Applicants, in an effort to clarify, have made a minor amendment to claims 2 and 3, to remove the term "if" from the claims, thereby making claim 2 specific to a received COMMIT or ROLLBACK decision and making claim 3 specific to a RECOVER decision.

Applicants hereby respectfully request the Examiner to withdraw the 35 U.S.C. §112 rejection with respect to claim 2-3.

A clarifying amendment has been made to remove the use of the relative term "minimum". Applicants wish to note that the process of utilizing "row-level locking" results in keeping contention in relational table to a minimum. Hence, Applicants have amended to clarify that the relational table specifies row-level locking.

Based on this clarification, Applicants hereby respectfully request the Examiner to withdraw the 35 U.S.C. §112 rejection with respect to claim 5.

With respect to claim 10, the Examiner asserts that "it is unclear what the network connection is separate from". Applicants have clarified claims 10 to read that the updating of entries in the relational database are done on a network that is separate from the network over which steps (a) through (c) are performed to avoid starting a new unit work. Applicants wish to emphasize that the amendment has been made for clarification purposes only and no new matter was added. The specification also supports such a feature (for example, see application-as-filed "This DELETE request is placed on a separate network connection, so that the DELETE does not start a new unit of work on the network connection that is used by the calling application.").

Based on this clarification, Applicants hereby respectfully request the Examiner to withdraw the 35 U.S.C. §112 rejection with respect to claim 10.

Also, based on the same arguments, Applicants also respectfully request the Examiner to withdraw the 35 U.S.C. §112 rejections with respect to claims 13-16, 19-21, 23-24 and 28.

REJECTIONS UNDER 35 U.S.C. § 101

Minor amendments have been made to claims to recite a "computer-based method" instead of a "method". Additionally, the software claims have been amended to recite a "computer-readable program code". Additionally, the Examiner is reminded that claims 12-17 have already been written as an article of manufacture claim, which are fully compliant under 35 U.S.C. §101. Reconsideration is respectfully requested in light of the above-amendments and Applicants also respectfully request the Examiner to withdraw the 35 U.S.C. §101 rejections with respect to the pending claims.

REJECTIONS UNDER 35 U.S.C. § 102

The Examiner has rejected claims 1-3, 6-14, 16-22, 24-26, and 29-31 under 35 U.S.C. 102(e) as being anticipated by the patent to Benson (6,873,995). Applicants respectfully disagree with the Examiner that the claims are taught by the cited art. The Manual for Patenting Examining Procedure (MPEP) § 2131 clearly sets forth the standard for rejecting a claim under 35 U.S.C. § 102(e). "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." (MPEP § 2131, quoting Verdegaal Bros. v. Union Oil Co. of California 2 USPQ2d 1051, 1053 (Fed Cir. 1987)). In this case, the cited art (i.e., Benson et al.) fails to teach the claimed invention as required by the MPEP.

Furthermore, Applicants wish to emphasize that both the pending patent application and the primary reference (Benson et al.) are commonly assigned to IBM, and, at the time the claimed

invention was made, were both subject to an obligation to be assigned to IBM. It will be shown below that the Benson reference does not provide many of the elements of the claims and therefore cannot be properly rejected under 35 U.S.C. §102(e). A shift to a 35 U.S.C. §103 rejection would result in disqualification of this reference as prior art.

Benson et al., also assigned to IBM, teaches a method of managing a content management system, said content management system being configured and controlled to begin a transaction and create an item at a client, establish a connection between the client and a library server, generate a transaction identifier and insert a record for the transaction in a tracking table associated with the library server, pass transaction data from the client to a resource manager, process the transaction at the resource manager and record transaction data in a tracking table associated with the resource manager, return transaction success/failure data to the client, compare activity recorded in the tracking tables, and take corrective action based upon the activity comparison.

With respect to claim 1's feature of "inserting an entry in said relational table corresponding to said unit of work and transmitting an instruction to said server to prepare to commit for said transaction, said inserted entry indicating said unit of work is potentially an indoubt entry", the Examiner relies on column 6, lines 12-29 of Benson as providing such a teaching. Column 12-29 of Benson is reproduced below:

"The Library Server Tracking Table (LS TT) is created by the SQL command set shown in FIG. 2, and includes ***two tables*** organized as a 2-level hierarchy.

1. TxTbl: [TXID (PK), Status ("I" or "C"), CommitTimestamp]--A row with Status="I" is inserted by each (lazy) begin transaction, BEGTRAN. An end transaction, ENDTRAN(commit) changes "I" to "C", sets CommitTimestamp, and commits the relational database transaction on LS. An end transaction, ENDTRAN(rollack) rolls back the relational database transaction, including the record inserted by begin transaction, BEGTRAN.

2. TxRMTbl: [TxID (non-null FK to TxTbl), Rmid]--A row is inserted by end transaction, ENDTRAN(commit) for each RM updated by the respective transaction." (emphasis added).

It should be noted that the Benson reference teaches **two tables to keep track of transactions**, however, the Examiner's citation, and the entire Benson reference is silent about **indoubt entries**. The Examiner is reminded that independent claims 1 and 12, for instance, specifically recite "**a relational table storing indoubt entries**" "inserting an entry in said relational table corresponding to said unit of work and transmitting an instruction to said server to prepare to commit for said transaction, said inserted entry indicating **said unit of work is potentially an indoubt entry**".

Further, independent claim 18 teaches a **software facilitating communication between a database cluster and a transaction manager**, wherein the software "**creates an SQL table for storing a list of potential indoubt units of work**" and **updates the SQL table of indoubt entries after execution of a COMMIT, ROLLBACK, or a RECOVER**. The Examiner's citation and the Benson reference in its entirety lack a teaching or suggestion for such features.

Also, independent claim 26 teaches **a first software module invoked to create a relational table in said server to store potential indoubt units of work**. Claim 26 also teaches for **a second module invoked to insert or delete indoubt entries of work in said relational table**, wherein insertions of indoubt entries are performed if an invocation is received from said client for a first phase of commit for a transaction representing a unit of work; and wherein deletions of indoubt entries are performed upon successful processing of a commit or rollback decision. The Examiner's citation and the Benson reference in its entirety lack a teaching or suggestion for such features.

Based on the arguments submitted above, Applicants respectfully assert that the Benson reference fails to teach many of the features of the pending independent claims. The above-mentioned arguments substantially apply to dependent claims 2-11, 13-17, 19-25, and 17-31 as they inherit all the features of the claim from which they depend.

It should also be noted that the Benson reference also specifically teach many of the features of the dependent claims. For example, claims 10, 20, and 22 teach the feature of **updating of entries in the relational database over a separate network** to avoid starting a

new unit work. The Examiner's citation and the Benson reference in its entirety lack a teaching or suggestion for such features.

Also, claims 5, 15, 23, and 28 teach **row-level locking of the relational table having the indoubt entries**. The Examiner's citation and the Benson reference in its entirety lack a teaching or suggestion for such features.

Hence, Applicants respectfully assert that the Benson reference fails to teach or suggest many of the features of Applicants' independent and dependent claims.

If the examiner still feels that such features of the pending claims are disclosed in the Benson et al. reference, Applicants respectfully remind the examiner that it is the duty of the examiner to specifically point out each and every limitation of a claim being rejected as per §1.104(c)(2) of Title 37 of the Code of Federal Regulations and section 707 of the M.P.E.P., which explicitly states that "the particular part relied on must be designated" and "the pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specified".

The Examiner is further reminded that as emphasized before, both the pending patent application and the primary reference (Benson et al.) are commonly assigned to IBM, and, at the time the claimed invention was made, were both subject to an obligation to be assigned to IBM and a shift to a 35 U.S.C. §103 rejection would result in disqualification of this reference as prior art.

SUMMARY

As has been detailed above, none of the references, cited or applied, provide for the specific claimed details of Applicants' presently claimed invention, nor renders them obvious. It is believed that this case is in condition for allowance and reconsideration thereof and early issuance is respectfully requested.

As this response has been timely filed, no request for extension of time or associated fee is required. However, the Commissioner is hereby authorized to charge any deficiencies in the fees provided to Deposit Account No. 09-0460.

If it is felt that an interview would expedite prosecution of this application, please do not hesitate to contact Applicants' representative at the below number.

Respectfully submitted,

/randywlacasse/

Randy W. Lacasse
Registration No. 34368

1725 Duke Street, Suite 650
Alexandria, Virginia 22314
(703) 838-7683

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